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(54) Closed circuit television system having seamless interactive television programming and expandable user participation.

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## Description

This application is related to previously issued U.S. Patents Nos. 4,507,680 entitled "One Way Interactive multisubscriber Communication System"; 4,573,072 entitled "Method for Expanding Interactive CATV Displayable Choices for a Given Channel Capacity"; 4,602,279 entitled "Method for Providing Targeted Profile Interactive CATV Displays" 4,264,924 entitled "Dedicated Channel Interactive Cable Television System", and 4,264,925 entitled "Interactive Cable Television System", the contents of all of which are specifically incorporated by reference herein in their entirety, and is an improvement thereon to enable the provision of discrete closed circuit interactive television systems, such as for training or educational purposes, as opposed to a larger scale cable television or broadcast system such as described in the aforementioned related patents.

The present invention relates to interactive television communication systems and particularly to closed circuit television systems for providing seamless interactive television programming with unlimited expandability of usership.

Real time conversational student response teaching apparatus are known, such as described in U.S. Patents Nos. 3,947,972 and 4,078,316. In addition, multiple choice student response systems are well known, such as exemplified by the system disclosed in U.S. Patents Nos. 2,921,385 ; 3,020,360 ; 2,826,828, 3,623,238 ; 3,546,791 ; 3,273,260 ; 3,665,615 ; 3,245,157 ; 3,284,923; 3,538,621 ; 3,477,144 ; 3,708,891 ; 3,255,536 ; 2,777,901 ; 2,908,767 ; 3,774,316 ; 3,194,895 ; 3,484,950 ; 3,343,280 , and 3,763,577 by way of example. None of these Prior Art systems, however, has been adapted to be employed in a closed circuit interactive television system having seamless interactive television programming in what appears to be a two-way interactive network in which the individualized television programming information to be received by the individual users of such a training or educational system may be independently displayed on a common program display channel of a conventional television in response to independent user selection from a multichannel television signal. Moreover, although prior art cable television systems are known in which a plurality of unrelated television programs, under control of a computer, are transmitted over a common television channel for selection by the individual subscribers, such as disclosed in U.S. Patents Nos. 3,814,841 and 3,757,225, such systems are not one way interactive systems capable of independent subscriber selectable reception of simultaneously transmitted multi-information television programming for providing a closed circuit television system having seamless interactive television programming independently displayable on a common program display channel. Furthermore, although U.S. Patents Nos. 4,624,924 ; 4,624,925 ; 4,507,680, 4,573,072; and 4,602,279 are all interactive television systems, they are primarily directed to mass audience cable or broadcast television systems as opposed to a discrete localized closed circuit television system capable of readily providing seamless interactive television programming. Such local education television programming has generally previously been provided through video disc or compact disc searching systems and methods with inherent disadvantages such as requiring one video disc per user with visible rather than seamless branching due to the time required to search and locate an upcoming branch. Moreover, such systems are quite costly, generally cannot run for a great length of time, can only be used by one user at a time and require each user to have a complete system of a player, a video disc and a computer. These disadvantages of the prior art are overcome by the present invention.

The present invention relates to a closed circuit discrete multichannel interactive television system for providing individualized interactive television programming to an expandable plurality of users connected into the closed circuit interactive television system in which switching between individualized television signals in a multichannel television signal transmitted from a head end occurs in a seamless manner for enabling display on a common program display channel of a given user interactive selection on an associated conventional television receiver via an interface and selection device, or smart box, connected between the television receiver and the head end. The head end is a multichannel television signal transmitter, such as a multiplexed video player or a plurality of single video players for continuously transmitting a multichannel television signal. The multichannel television signal transmission comprises a plurality of different interactively selectable audio/video television signals which are at least in frame accurate synchronization with respect to each other and contain command signals embedded therein for controlling provision of the individualized television programming on the common program display channel. The interface and selection device is responsive to the embedded command signals for enabling the aforementioned switching between the individualized television signals in a substantially instantaneous seamless interactive television display presentation having invisible branching (searching). Different television receivers in the system are capable of displaying different individualized television signals on the common program display channel at substantially the same time dependent on the various independent

interactive user selections for the plurality of users at any given time. The interface and selection device may include a microprocessor and a pair of television signal tuners for pretuning the associated television receiver to a television signal frequency corresponding to the next individualized television signal for display on the associated television receiver common program display channel dependent on the user selection  
 5 before an actual change in the television display on the common program display channel occurs in response to the independent user interactive selection for maintaining seamlessness on the television display despite interactive changes in the television signal selected for display from the multichannel television signal. If desired, the capability of the interactive television programming provided on the closed circuit interactive television system of the present invention may be expanded through the use of stacking  
 10 of the available responses to be selected. In addition, the system is transparent to the number of users connected to it and may readily be expanded by merely connecting a conventional television receiver to the system via an interface and selection device.

Fig. 1 is a block diagram of the overall presently preferred closed circuit interactive television system in accordance with the present invention ;

15 Fig. 2 is a block diagram of a typical presently preferred interface and selection device, or smart box, in accordance with the present invention, for use on the system of Fig. 1 ;

Fig. 3 is a schematic diagram, partially in block of a typical presently preferred selector board portion of the interface and selection device of Fig. 2 ; and

20 Fig. 4 is a schematic diagram, partially in block, of a typical presently preferred control board or microprocessor control portion of the interface and selection device of Fig. 2.

Referring now to the drawings in detail, and initially to Fig. 1 thereof, the presently preferred closed circuit interactive television system in accordance with present invention, generally referred to by the reference numeral 10, is shown. The closed circuit television system 10 preferably provides a plurality, preferably four by way of example, of audio/video television signals in at least frame accurate synchronization from a head end multichannel television signal transmitter 12, with four such channels labeled "A" 14,  
 25 "B" 16, "C" 18 and "n" 20 being shown by way of example in Fig. 1. Preferably, all of these television signals 14,16,18,20 are continuously transmitted to the plurality of users in the closed circuit interactive television system 10 which may readily be expanded to include any desired number of users, with "n" such users being represented in Fig. 1 by the three user stations 22, 24 and 26 in Fig. 1. As shown and preferred  
 30 in Fig. 1, and as will be described in greater detail hereinafter, each user station 22, 24, 26 preferably includes a conventional RF demodulator 28a, 28b, 28c, respectively, an interface and selection device or smart box 30a, 30b, 30c, respectively, and a conventional television receiver 32a, 32b, 32c, respectively, which may preferably receive the desired interactive television programming on a common program display channel, such as channel 3, which is preferably an unused channel for normal television broadcast so that  
 35 the television receiver 32a, 32b, 32c may also receive conventional television broadcast. This becomes particularly important in a classroom environment where the television receiver 32a, 32b, 32c is normally used to receive localized television programming created in the school as well as outside conventional television broadcasts as part of the educational instruction in the classroom. In this regard, the presently preferred closed circuit interactive television system 10 of the present invention readily lends itself to such  
 40 uses as localized educational system for schools, localized training systems, localized control of marketing displays, localized where the head end 12 is located in one room in the building and the users distributed gambling systems in hotels, etc., by way of example, throughout the building as opposed to the mass audience systems provided by conventional cable television networks.

As further shown and preferred in Fig. 1, the audio/video television signals 14, 16, 18, 20 which are  
 45 preferably provided simultaneously in frame accurate or better synchronization, may be provided to the various users as a multiplexed multichannel television signal from conventional RF modulators 34 and a combiner via a conventional RF distribution amplifier 36 having as many output ports as students or users connected on the system 10. Users may readily be added or subtracted from the closed circuit interactive television system 10 merely by adding or removing another typical user station 22, 24 or 26. To do thus,  
 50 assuming a user is to be added to the system 10, the user need only add a smart box or interface and selection device 30 between a conventional television receiver 32 and one of the output ports of the RF distribution amplifier 36. On the system 10 itself is transparent to the number of users 22, 24 or 26 on the system 10, which provides an unlimited expansion of users with no additional head end hardware or software.

55 Preferably, each smart box or interface and selection device 30 takes commands, only from the particular channel the associated user is on, from command signals embedded in the audio/video television signals being transmitted from the head end 12 (or can be on the audio subcarriers) and can switch or change between the multiple channels being transmitted. Since the multiple channels in the multichannel

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television signal being transmitted from the head end are preferably in frame accurate synchronization or better, such switches appear to be seamless, that is the television display never freezes or goes blank, and are essentially instantaneous. As will be described in greater detail hereinafter, preferably the interactive television program being transmitted from the head end 12 is made in such a way as to anticipate possible switches or branch changes and to design the camera shots and audio so that each change will match each other similar to the way a conventional television edit matches. In this manner, the user or viewer would therefore see a seamless television program that contains regular camera cuts as well as camera cuts that also create branches, which means that in addition to a camera cut the channel may also change, such as illustrated by way of example below in Table A :

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Table A

| Channel A                                                                                                                                                                                                                      | Channel B                                                                                                                                                                                     | Channel C                                                                                                                                                                                  | Channel "n"                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>[Camera shot is wideshot] Thank you for indicating your education level.</p> <p>[Cut to close up camera shot] I can see from your answer that you never finished high school. I'll remember this and refer to it later.</p> | <p>Nothing is on this channel at this point</p> <p>[Cut to close up camera shot] I can see from your answer that you are a high school graduate. I'll remember this and refer to it later</p> | <p>Nothing is on this channel at this point</p> <p>[Cut to close up camera shot] I can see from your answer that you are a college graduate. I'll remember this and refer to it later.</p> | <p>Nothing is on this channel at this point.</p> <p>[Cut to close up camera shot] I can see from your answer that you have done graduate work. I'll remember this and refer to it later.</p> |

Preferably, in creating the above interactive television programming, the most likely branch is the one that is shot through on a continuous basis. As a result, most of the time camera angle changes are not necessary for a likely branch.

5 With respect to the head end 12, the source of the prerecorded television signals for the desired interactive television programming can be conventional four 1/2 inch VHS machines, 3/4 inch video tape machines, 1 inch professional machines, video disc players run on synch as opposed to search, or a single tape source that is multiplexed down to hold four separate signals, such as the alternate field and alternate frame approach. The wire or connection from the head end 12 to the various smart boxes or interface and selection devices 30, may preferably be coaxial cable, fiber optics, or direct baseband video and audio, by way of example.

Referring now to Figs. 2-4, a typical preferred smart box or interface and selection device 30 is shown. As shown and preferred in Figs. 2-4, the interface and selection device is preferably a microprocessor 40 based device that receives all of the transmitted television signals, such as four in the above example, and can preferably instantaneously switch between all four signals only letting one through to the associated television receiver 32. As shown in Fig. 4, which is a detailed schematic of the microprocessor or control board 40 portion of the system 10, the control board 40 has logic, intelligence, and memory. In addition, as shown and preferred, a pair of conventional tuners 44, 46 are provided in interface and selection device 30 each of which can tune to the one of the plurality, or 4 by way of example, of signals which it wishes to receive and pass through to the associated television receiver 32. Preferably, the second television tuner 46 is provided to enhance the seamlessness of the system 10. Thus, since conventional television tuners may not be able to tune to one of the other television frequencies fast enough to maintain the seamless nature of the system 10, the second tuner 46 is provided which preferably returns to the proper television frequency that the microprocessor 40 tells it will be the next channel it will be changing to. This preferably happens 25 microseconds before the actual change but this is enough to maintain seamlessness. The first tuner 44 would then be instructed to pretune to the next change that is coming up. Thus, the tuners 44 and 46, which are conventional such as available from Sanyo, and which preferably each comprise an RF section 50a, 50b, respectively and a demodulator section 52a, 52b, respectively alternate in pretuning the channel to the television frequency of the next channel under control of the microprocessor 40 and tuner control 60. The interface and selection device 30 also preferably includes a conventional vertical interval synch detector 54 which detects the vertical synch in the received television signal so as to enable the change or switching between channels at the vertical interval to, once again, enhance seamlessness. The actual switch between tuners/demodulators is accomplished by conventional video switch 42 and conventional audio switch 41. In addition, an input selector 56, such as a four button keypad is provided either independently or on the smart box 32 for enabling the interactive selection of a plurality of different user interactive choices or responses during the interactive programming being transmitted from the head end 12. The input selector is either wired directly to the smart box or communicates via an infrared communication link. In addition, conventional joysticks sensors, buttons and the like may also be employed as user input devices.

40 Preferably, as previously mentioned, embedded in the various television signals, are instrumentation codes that instruct the smart box 30 in switching, memory, logic and computational codes, such as the manner of coding explained by way of example, in U.S. Patent No. 4,507,680, the contents of which are incorporated by reference herein in their entirety. The codes, as described in U.S. Patent No. 4,507,680, are preferably embedded on line 21 and the video signals are decoded by decoder 43 to provide this command information to the microprocessor 40. The smart box 30 preferably only requires the codes that exist on the various television channels it passes through to its associated television receiver 32. It will, thus preferably, not receive, and will ignore, the embedded codes on the other channels. Of course, for each user in the system 10, the resulting code stream is likely to be different because the combinations of the different channels they see will likely be different.

50 Thus, the presently preferred system 10 has instant invisible branching because the branches come from one of the other three channels that are already in frame accurate synchronization with the source channel. The interactive television programming used with the system 10 is preferably designed so that the channel the user is on will always cut or edit match any other channel the user might change to in the interactive television transmission. This is preferably similar to how an edit is performed in post production video except that in that instance the video will always be on the same channel. Thus, in effect, the present invention 10 is a real time dynamic editing system that creates innumerable combinations and versions of the program based on how the channels are switched, which, in turn, depends on the selections made by the user in conjunction with the corresponding smart box commands.

The system 10 of the present invention may incorporate any of the features set out in any of the  
 aforementioned patents incorporated by reference herein, such as stacking, which is described by way of  
 example in U.S. Patent No. 4,573,072. Suffice it to say that four channels, for example, do not limit the  
 system 10 to only four outcomes. Stacking can increase this number to 6,9 or even more. Stacking  
 5 provides time delays in responses. Such time delays, which are invisible to the user since program material  
 or filler is created on one of the channels, allow for branching to be expanded to more alternatives than the  
 number of available channels. For example, with one channel as filler, six possible outputs can be given ;  
 and if this channel filled 2 time slots, then 9 outputs could be given, such as illustrated below in Table B :

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Table B

|    |           |          |                    |                    |
|----|-----------|----------|--------------------|--------------------|
| 15 | CHANNEL 1 | DIALOGUE | DIALOGUE<br>FILLER | DIALOGUE<br>FILLER |
|    | 2         | OUTPUT 1 | OUTPUT 4           | OUTPUT 7           |
| 20 | 3         | OUTPUT 2 | OUTPUT 5           | OUTPUT 8           |
|    | 4         | OUTPUT 3 | OUTPUT 6           | OUTPUT 9           |

In addition to the above, annexed hereto as Table C is an example of a typical script for an interactive  
 25 television program in accordance with the present invention.

By utilizing the system of the present invention, a discrete closed circuit multichannel interactive  
 television system is provided, having instantaneous invisible branching between interactively selected  
 choices, and which is readily expandable through the use of a smart box and a conventional television.

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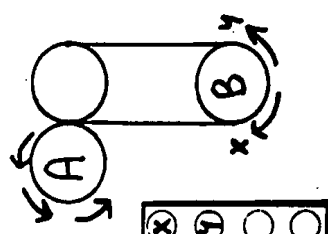
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ACTUAL SCRIPT EXAMPLE

|    |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5  | CHANNEL 4 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 10 |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 15 | CHANNEL 3 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 20 |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 25 | CHANNEL 2 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 30 |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 35 | CHANNEL 1 | <p>Let's do some training. These are called Pulley Problems, and they always appear on the college board exams:</p>  <p>Now, if wheel A is moving in the direction indicated, in which direction would wheel B move? Answer either "X" or "Y" -- you've got seven seconds. So answer either X or Y.</p> <p>COMPUTER COMMANDS:<br/>If viewer selects X, then stay on Channel 1; if viewer selects Y, then go to Channel 2; if viewer selects an unlabeled button, then go to Channel 3; or, if viewer fails to answer, then go to Channel 4.</p> <p>You have answered...</p> |

NOTE: the horizontal dotted lines indicate the instant of possible channel changes.



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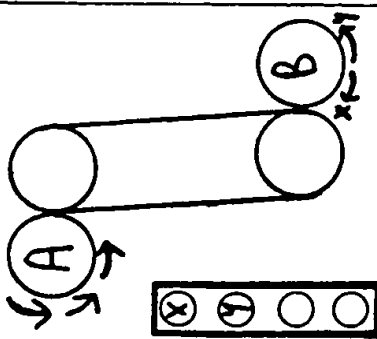
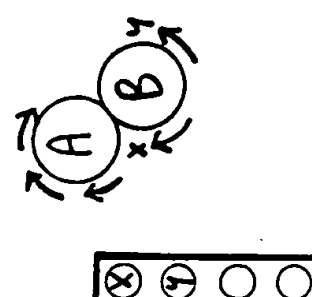
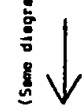
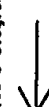
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| CHANNEL 1                                                                                                                                                                                                                                                                                                                                                                                                                    | CHANNEL 2                                                                                                                                                                                                                                                                                                                                                                     | CHANNEL 3                                                                                                                                                                                                                                                                                                                                                               | CHANNEL 4                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>...Direction X -- good work! Tracing through it, we can see that you are right. So let's give you a more difficult pulley problem for the next one:</p>                                                                                                                                                                                | <p>...Direction Y, and I'm sorry -- that's wrong. Tracing through it, you can see that wheel B should move in Direction X. Since you answered that one wrong, let's try an easier pulley problem:</p>                                                                                       | <p>...by pushing an unlabeled button, so I would have to score you wrong. Tracing through, you can see that wheel B should move in Direction X. I'd better give you an easier pulley problem; this time, please follow the instructions.</p> <p>(Same diagram as on Channel 2.)</p>    | <p>...too late. You only had seven seconds, so I'll have to mark you wrong. You see, if wheel A moves this way, then wheel B should move in Direction X. I think I'd better give you an easier pulley problem. But this time, try to answer more quickly please:</p> <p>(Same diagram as on Channel 2.)</p>  |
| <p>If wheel A is moving in the direction indicated, in which direction would wheel B move this time? Answer either Direction X, or Direction Y. You have six seconds -- Direction X or Direction Y.</p> <p>COMPUTER COMMANDS:</p> <p>If the viewer selects X, then go to Channel 2. If the viewer selects Y, then stay on Channel 1. If the viewer selects an unlabeled button or fails to answer, then go to Channel 2.</p> | <p>If wheel A moves in the direction indicated, in which direction would wheel B move? You have six seconds. Answer either Direction X or Direction Y.</p> <p>COMPUTER COMMANDS:</p> <p>If the viewer selects X, then go to Channel 4. If the viewer selects Y, then go to Channel 3. If the viewer selects an unlabeled button or fails to answer, then go to Channel 4.</p> | <p>If wheel A moves in this direction, in which direction does wheel B move? You have six seconds. Answer either Direction X or Direction Y.</p> <p>COMPUTER COMMANDS:</p> <p>If the viewer selects X, then stay on Channel 4. If the viewer selects Y, then go to Channel 3. If the viewer selects an unlabeled button or fails to answer, then stay on Channel 4.</p> | <p>If wheel A moves in this direction, in which direction does wheel B move? You have six seconds. Answer either Direction X or Direction Y.</p> <p>COMPUTER COMMANDS:</p> <p>If the viewer selects X, then stay on Channel 4. If the viewer selects Y, then go to Channel 3. If the viewer selects an unlabeled button or fails to answer, then stay on Channel 4.</p>                       |

|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |    |                                                                                                                                                                                                                               |    |                                                                                                                                                                                                             |   |                                                                                                                                                                                                                                                      |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 45 | <p><b>CHANNEL 1</b></p> <p>You've answered Direction Y. That's right -- good work! You're really good at these! Let's trace through it together: Wheel A moves in that direction; Wheel B moves in Direction Y.</p> <p>(Stay on Channel 1.)</p> <p>Let's go to another kind of problem found on college board exams. These are called "Fulcrum Displays," and since we haven't encountered these problems yet in this course, why don't you choose the level of difficulty.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>EASY</p> <p>MEDIUM</p> <p>DIFFICULT</p> </div> <p>Choose either easy, medium, or difficult.</p> <p><b>COMPUTER COMMANDS:</b></p> <p>If viewer selects easy, stay on Channel 1; if viewer selects medium, go to Channel 2; if viewer selects difficult, go to Channel 3; or if viewer selects an unlit button, or fails to respond, go to Channel 4.</p> | 35 | <p><b>CHANNEL 2</b></p> <p>You have answered Direction X, and I'm sorry -- but you're wrong this time. Tracing through, you can see that the correct answer would be Direction Y.</p> <p>(Automatic switch to Channel 1.)</p> | 20 | <p><b>CHANNEL 3</b></p> <p>You have answered Direction Y. Good work -- you're improving! If Wheel A moves in this direction, then Wheel B moves in Direction Y.</p> <p>(Automatic switch to Channel 1.)</p> | 5 | <p><b>CHANNEL 4</b></p> <p>You have answered X, and you are wrong again! Now, this is a very easy problem; watch, and I'll show you. Wheel A moves in this direction, then Wheel B moves in Direction Y.</p> <p>(Automatic switch to Channel 1.)</p> |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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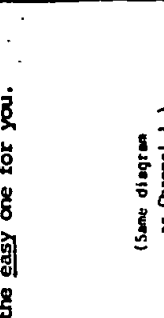
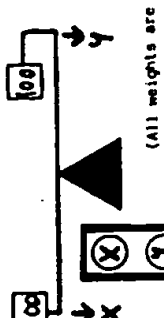
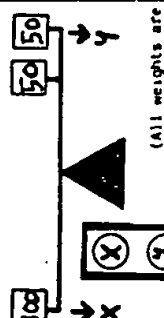
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| CHANNEL 1                                                                                                                                                                                                                                                                                                                                                                                              | CHANNEL 2                                                                                                                                                                                                                                                                                                                                                                                         | CHANNEL 3                                                                                                                                                                                                                                                                                                                                                                     | CHANNEL 4                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>OK, let's do the <u>easy</u> question.</p>  <p>(All weights are in pounds.)</p>                                                                                                                                                                                                                                    | <p>OK, let's do the <u>medium</u> question.</p>  <p>(All weights are in pounds.)</p>                                                                                                                                                                                                                             | <p>OK, let's do that <u>difficult</u> one!</p>  <p>(All weights are in pounds.)</p>                                                                                                                                                                                                         | <p>OK, I see that you've made some error, so I'll choose the <u>easy</u> one for you.</p> <p>(Same diagram as Channel 1.)</p>                                                                                                                                                                                                                                     |
| <p>If the weights were placed on this see-saw as indicated, which side would go down: X or Y? Please answer either X, Y, or neither if you think the weights would balance. This time you'll only have five seconds.</p> <p><b>COMPUTER COMMANDS:</b><br/>If viewer selects X, then stay on Channel 1. If the viewer selects Y, neither, an unlabeled button, or fails to answer, go to Channel 4.</p> | <p>If the weights were placed on this see-saw as indicated, which side would go down: X or Y? Please indicate your answer -- X, Y, or neither if you think they'd balance. You only have five seconds.</p> <p><b>COMPUTER COMMANDS:</b><br/>If the viewer selects X, then stay on Channel 2. If the viewer selects Y, neither, an unlabeled button, or fails to answer, then go to Channel 4.</p> | <p>If the weights were placed on this see-saw as indicated, which side would go down? Answer either X, Y, or neither if you think they'd balance. This time you have five seconds.</p> <p><b>COMPUTER COMMANDS:</b><br/>If the viewer selects X, then stay on Channel 3. If the viewer selects Y, neither, an unlabeled button, or fails to answer, then go to Channel 4.</p> | <p>If the weights were placed on this see-saw as indicated, which side would go down? Answer either X, Y, or neither if you think they'd balance. You have five seconds.</p> <p><b>COMPUTER COMMANDS:</b><br/>If the viewer selects X, then go to Channel 1. If the viewer selects Y, neither, an unlabeled button, or fails to answer, then go to Channel 4.</p> |

|    |                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                    |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 50 | CHANNEL 1                                                                                                                                                                                                                                                                                                                            | CHANNEL 2                                                                                                                                                                                                                                                                                                  | CHANNEL 3                                                                                                                                                                                                                                                                               | CHANNEL 4                                                                                                                                                                                                                                                                                                                                          |
| 45 | You are right -- X would go down. And even though this was an easy question, it's still good work.                                                                                                                                                                                                                                   | You are right -- X would go down. And even though you chose the medium question, this is still good work.                                                                                                                                                                                                  | You are right -- X would go down. And since you chose the difficult question, this is especially good work.                                                                                                                                                                             | You are wrong. X would go down. Now, at this point I would explain the principles behind Fulcrum Display problems, and then I would give you a group of remedial ones to go through. In addition, shows like these can keep track of your cumulative progress, and at the end of each program, I can review your overall performance.              |
| 40 | COMPUTER COMMENTS:<br>If the viewer answered both pulley problems wrong, or answered the first pulley problem right and the second pulley problem wrong, then go to Channel 1. If the viewer answered the first pulley problem right, then go to Channel 2. If the viewer answered both pulley problems right, then go to Channel 3. | Well, that's all the time we have for today. Now, in reviewing your performance I can see that although you got the first pulley problem wrong, you did get the easier one right, and the Fulcrum Display problem right. The appropriate program for you on this system would be the intermediate program. | Well, that's all the time we have for today. In reviewing your performance, I see that you got both pulley problems and the Fulcrum Display problem right. Congratulations -- that's perfect performance! The appropriate program for you on this system would be the advanced program. | COMPUTER COMMENTS:<br>If the viewer answered both pulley problems incorrectly, then go to Channel 1. If viewer answered one pulley problem wrong and the other right (in either order), then go to Channel 2. If the viewer answered both pulley problems correctly, then go to Channel 3.<br>(Switch to Channels 1, 2, or 3, as indicated above.) |
| 35 | (Automatic switch to Channel 4.)                                                                                                                                                                                                                                                                                                     | (Automatic switch to Channel 4.)                                                                                                                                                                                                                                                                           | (Automatic switch to Channel 4.)                                                                                                                                                                                                                                                        | Thanks for joining me -- have a nice day.                                                                                                                                                                                                                                                                                                          |
| 30 | In this program you missed both the pulley problems and the Fulcrum Display problem. This is not good performance. The appropriate program for you on this system would be the beginners program. Good day.                                                                                                                          | In this program you had mixed results with regard to the pulley problems, and you missed the Fulcrum Display problem. The appropriate program for you on this system would be the intermediate program. Good day.                                                                                          | In this program, although you got both the pulley problems right, you did miss the Fulcrum Display problem. The appropriate program for you on this system would be the intermediate program. Good day.                                                                                 | (Closing filler.)                                                                                                                                                                                                                                                                                                                                  |
| 25 | END                                                                                                                                                                                                                                                                                                                                  | END                                                                                                                                                                                                                                                                                                        | END                                                                                                                                                                                                                                                                                     | END                                                                                                                                                                                                                                                                                                                                                |

Note: In the above script, all camera shots were designed so that the resulting show appears continuous and seamless to the user, no matter which allowable branch path was taken.

## 55 Claims

1. A multichannel interactive television system (10) for providing individualized interactive television programming to a plurality of users connected into said interactive television system, said system

comprising multichannel television signal transmission means (12) for transmitting a multichannel television signal comprising a plurality of selectable channels, a plurality of conventional television receiver means (32a, 32b, 32c) for selectively receiving individualized television programming on a common program display channel, and an interface and selection means (30a, 30b, 30c) disposed between each of said television receiver means and said multichannel television signal transmission means for receiving said transmitted multichannel television signal comprising said plurality of selectable channels and converting it into an individualized selected television channel for display of said selected channel on said common program display channel on the television receiver means associated with a given user in response to an independent user selection of a given interactive response to a plurality of selectable interactive responses in said multichannel television signal transmission, each of said interactive responses being associated with a different channel in said plurality of selectable channels, each of said users having an associated television receiver means and interface and selection means for making said independent interactive user selection for providing said individualized television programming on said common program display channel, said multichannel television signal transmission comprising a plurality of different interactively selectable audio/video television signals (14, 16, 18, 20) respectively associated with each of said plurality of selectable channels comprising said transmitted multichannel television signal, said interactively selectable television signals being in at least frame accurate synchronization with respect to each other, characterized in that said interactively selectable television signals further comprise command signals embedded therein for controlling provision of said individualized television programming on said common program display channel, said interface and selection means being responsive to said embedded command signals for enabling switching of said individualized television channel between said plurality of interactively selectable television channels for display of said associated audio/video television signal corresponding to said selected one of said plurality of selectable channels on said common program display channel in a substantially instantaneous seamless interactive television display presentation on said common program display channel of said associated television receiver means, different television receiver means in said system being capable of displaying different individualized associated audio/visual television signals on said common program display channel at substantially the same time dependent on the various independent interactive user selections of respective ones of said plurality of selectable channels by said plurality of users at any given time, said interface and selection means comprising a microprocessor means (40) and a television signal tuner means (44, 46), said television signal tuner means comprising a pair of tuners, one of which is tuned to a currently selected channel of said transmitted multichannel television signal, and the other of which is tunable in advance of receipt of a next successive frame to the next selected channel of said transmitted multichannel television signal (14, 16, 18, 20) for providing selective next channel tuning before each channel switching between said plurality of selectable channels, said microprocessor means responding to said individualized independent user interactive selection and said embedded command signals for pretuning said other tuner in said associated television receiver means to a television signal frequency corresponding to said next selected channel for providing a display on said associated television receiver means (32a, 32b, 32c) common program display channel dependent on said independent user selection before an actual change in said television display on said common program display channel from said currently selected channel in said plurality of selectable channels occurs in response to said independent user interactive selection; whereby said seamlessness is maintained for said television display on said common program display channel despite interactive changes in said television channel selected for display from said plurality of channels comprising said multichannel television signal.

2. An interactive television system in accordance with claim 1, wherein said plurality of different associated selectable television signals (14, 16, 18, 20) in said multichannel television signal comprise a plurality of edit matched individualized television signals, whereby the television frequency said one tuner of said conventional television means is tuned to at any given time will edit match into any other television frequency said other tuner of said television receiver means (32a, 32b, 32c) is subsequently tuned to in response to a change in said user selection.

3. An interactive television system in accordance with claim 2, wherein one of said edit matched individualized television signals comprises a source channel television frequency and said other edit matched individualized television signals (14, 16, 18, 20) comprise different branch channel television frequencies being in frame accurate synchronization with said source channel television frequency; whereby instant vertical interval invisible branching may be provided in response to different user

selections.

4. An interactive television system in accordance with any one of claims 1 or 2, wherein said multichannel television signal (14, 16, 18, 20) is continuously transmitted to said plurality of conventional television receiver means (32a, 32b, 32c) during a given program interval.
5. An interactive television system in accordance with claim 1, wherein said transmitted multichannel television signal (14, 16, 18, 20) comprises a sequence of a plurality of different multichannel television message stacks, each stack comprising a plurality of time concurrent multichannel television messages, said plurality of stacks comprising a stacking array, said stacking array providing a plurality of selectable time and space multiplexed complete prerecorded television messages from said transmission means (12), said array being transmitted in said system to said interface means (30a, 30b, 30c), a single substantially complete television message being interactively selectable from said array in response to said user selection for providing an interactive television message as said individualized associated audio/video television signal to said conventional television receiver means (32a, 32b, 32c) in said interface means, the quantity of available interactively selectable prerecorded television messages in said array being greater than the quantity of available different selectable associated television signals, said array comprising a television programming sequence having an interactively variable program information content for a given television program, said interface means comprising means for interactively selecting a multichannel message path through said array for providing said television programming sequence program information content, said interactive selection being multiplexed in both time and channel choices in said array, said interface means selecting said message path through said array in response to a single interactive selection, a different interactive selection providing a different message path through said array and a different program information content for said television programming sequence.
6. An interactive television system in accordance with claim 5, wherein said program content for said given television program further comprises a common prerecorded television message commonly displayable during said given television program irrespective of any interactive selections of said interactively selectable television messages.
7. An interactive television system in accordance with claim 6, wherein each of said complete television messages in said array comprising said television programming sequence comprises a segway portion for providing an information transition between said common television message and said television programming sequence, said television programming sequence and said common television message being adjacent in real time in a given television program.

#### Patentansprüche

1. Interaktives Mehrkanal-Fernsehsystem (10) zur Schaffung einer individualisierten, interaktiven Fernsehprogrammgestaltung für mehrere an das interaktive Fernsehsystem angeschlossene Teilnehmer, umfassend: eine Mehrkanal-Fernsehsignal-Sendeeinrichtung (12) zum Senden eines Mehrkanal-Fernsehsignals mit mehreren auswählbaren Kanälen, mehrere konventionelle Fernsehempfangseinrichtungen (32a, 32b, 32c) zum selektiven Empfangen individualisierter Fernsehprogrammierung auf einem gemeinsamen Programmanzeige Kanal, und eine Schnittstellen- und Auswahlrichtung (30a, 30b, 30c), die sich zwischen jeder Fernsehempfangseinrichtung und der Mehrkanal-Fernsehsignal-Sendeeinrichtung befindet, um das gesendete Mehrkanal-Fernsehsignal, welches die auswählbaren Kanäle enthält, zu empfangen und es in einen individualisierten ausgewählten Fernsehkanal umzusetzen zwecks Anzeige des ausgewählten Kanals auf dem gemeinsamen Programmanzeige Kanal auf der Fernsehempfangseinrichtung, die zu einem gegebenen Teilnehmer gehört, ansprechend auf eine unabhängige benutzerseitige Auswahl einer gegebenen interaktiven Antwort auf mehrere auswählbare interaktive Antworten in der Sendung des Mehrkanal-Fernsehsignals, wobei jede der interaktiven Antworten zu einem anderen Kanal von den mehreren auswählbaren Kanälen gehört, jeder der Teilnehmer eine zugehörige Fernsehempfangseinrichtung und Schnittstellen- und Auswahlrichtung besitzt, um die unabhängige interaktive, benutzerseitige Auswahl vornehmen zu können und dadurch die individualisierte Fernsehprogrammierung auf dem gemeinsamen Programmanzeige Kanal zu erreichen, wobei die Mehrkanal-Fernseh-Sendung mehrere verschiedene interaktiv auswählbare Audio/Video-Fernsehsignale (14, 16, 18, 20) aufweist, von denen jedes zu jeweils einem der mehreren auswählbaren Kanäle gehört,

die das gesendete Mehrkanal-Fernsehsignal bilden, die interaktiv auswählbaren Fernsehsignale in zumindest vollbildgenauer Synchronisierung zueinander stehen, **dadurch gekennzeichnet**, daß die interaktiv auswählbaren Fernsehsignale außerdem darin eingebettete Befehlssignale enthalten, um die Bereitstellung der individualisierten Fernsehprogrammierung auf dem gemeinsamen Programmanzeigekanal zu steuern, wobei die Schnittstellen- und Auswahleinrichtung auf die eingebetteten Befehlssignale anspricht, um ein Umschalten des individualisierten Fernsekanals zwischen den mehreren interaktiv auswählbaren Fernsehsignalen für die Anzeige des zugehörigen Audio/Video-Fernsehsignals entsprechend dem ausgewählten von den mehreren auswählbaren Kanälen auf dem gemeinsamen Programmanzeigekanal in einer im wesentlichen momentan nahtlosen interaktiven Fernsehangedarstellung auf dem gemeinsamen Programmarzeigekanal der zugehörigen Fernsehempfangseinrichtung zu ermöglichen, wobei verschiedene Fernsehempfangseinrichtungen innerhalb des Systems in der Lage sind, im wesentlichen gleichzeitig verschiedene individualisierte zugehörige Audio/Video-Fernsehsignale auf dem gemeinsamen Programmanzeigekanal anzuzeigen, abhängig von den verschiedenen unabhängigen interaktiven benutzerseitigen Auswahlvorgängen der jeweiligen mehreren auswählbaren Kanäle seitens der mehreren Teilnehmer zu jeder gegebenen Zeit, wobei die Schnittstellen- und Auswahleinrichtung eine Mikroprozessoreinrichtung (40) und eine Fernsehsignal-Tunereinrichtung (44, 46) aufweist, von denen die Fernsehsignal-Tunereinrichtung ein Paar Tuner enthält, von denen einer auf einen derzeit ausgewählten Kanal des gesendeten Mehrkanal-Fernsehsignals abgestimmt ist, während der andere von ihnen vor dem Empfang eines als nächstes folgenden Vollbildes auf den nächsten Kanal des gesendeten Mehrkanal-Fernsehsignals (14, 16, 18, 20) abstimmbar ist, um eine selektive Abstimmung auf den nächsten Kanal zu ermöglichen, bevor jede Kanalschaltung zwischen den mehreren auswählbaren Kanälen erfolgt, die Mikroprozessoreinrichtung auf die individualisierte unabhängige benutzerseitige interaktive Auswahl und die eingebetteten Befehlssignale anspricht, indem sie den anderen Tuner in der zugehörigen Fernsehempfangseinrichtung auf eine Fernsehsignalfrequenz vorabstimmt, welche dem als nächstes ausgewählten Kanal entspricht, um eine Anzeige auf dem gemeinsamen Programmanzeigekanal der zugehörigen Fernsehempfangseinrichtung (32a, 32b, 32c) abhängig von der unabhängigen benutzerseitigen Auswahl zu ermöglichen, bevor eine tatsächliche Änderung der Fernsehangezeige auf dem gemeinsamen Programmanzeigekanal von dem derzeit ausgewählten Kanal unter den mehreren auswählbaren Kanälen ansprechend auf die unabhängige benutzerseitige interaktive Auswahl erfolgt; wodurch die Nahtlosigkeit für die Fernsehangezeige auf dem gemeinsamen Programmanzeigekanal ungeachtet interaktiver Änderungen in dem für die Anzeige aus den mehreren das Mehrkanal-Fernsehsignal bildenden Kanälen ausgewählten Fernsehkanal aufrechterhalten wird.

2. Interaktives Fernsehsystem nach Anspruch 1, bei dem die verschiedenen zugeordneten auswählbaren Fernsehsignale (14, 16, 18, 20) in dem Mehrkanal-Fernsehsignal mehrere in der Ausgabeaufbereitung angepaßte, individualisierte Fernsehsignale umfassen, wodurch die Fernsehfrequenz, auf die der eine Tuner der konventionellen Fernseheinrichtung zu jeglicher gegebenen Zeit abgestimmt ist, im Schnitt angepaßt wird auf jegliche andere Fernsehfrequenz, auf die der andere Tuner der Fernsehempfangseinrichtung (32a, 32b, 32c) anschließend in Abhängigkeit einer Änderung der benutzerseitigen Auswahl abgestimmt wird.

3. Interaktives Fernsehsystem nach Anspruch 2, bei dem eines der im Schnitt angepaßten individualisierten Fernsehsignale eine Quellenkanal-Fernsehfrequenz aufweist und die anderen im Schnitt angepaßten individualisierten Fernsehsignale (14, 16, 18, 20) verschiedene Zweigkanal-Fernsehfrequenzen aufweisen, die sich in vollbildgenauer Synchronisierung mit der Quellenkanal-Fernsehfrequenz befinden, wodurch ansprechend auf unterschiedliche benutzerseitige Auswahlvorgänge eine augenblickliche unsichtbare Verzweigung in der Vertikalaustastücke ermöglicht wird.

4. Interaktives Fernsehsystem nach Anspruch 1 oder 2, bei dem das Mehrkanal-Fernsehsignal (14, 16, 18, 20) kontinuierlich an die herkömmlichen Fernsehempfangseinrichtungen (32a, 32b, 32c) während einer gegebenen Programmzeitspanne gesendet wird.

5. Interaktives Fernsehsystem nach Anspruch 1, bei dem das gesendete Mehrkanal-Fernsehsignal (14, 16, 18, 20) eine Sequenz von mehreren unterschiedlichen Mehrkanal-Fernsehnachrichtens Stapeln enthält, von denen jeder Stapel mehrere zeitgleiche Mehrkanal-Fernsehnachrichten umfaßt, die Stapel ein Stapelfeld aufweisen, das Stapelfeld mehrere auswählbare zeitlich und räumlich im Multiplex verarbeitete vollständige, vorab aufgezeichnete Fernsehnachrichten seitens der Sendeeinrichtung (12) liefert, das Feld in dem System zu der Schnittstelleneinrichtung (30a, 30b, 30c) gesendet wird, eine einzelne

- im wesentlichen vollständige Fernsehnachricht aus dem Feld ansprechend auf die benutzerseitige Auswahl interaktiv auswählbar ist, um eine interaktive Fernsehnachricht als das individualisierte zugehörige Audio/Video-Fernsehsignal an die herkömmliche Fernsehempfangseinrichtung (32a, 32b, 32c) innerhalb der Schnittstelleneinrichtung zu liefern, wobei die Menge von verfügbaren interaktiv auswählbaren, vorab aufgezeichneten Fernsehnachrichten innerhalb des Feldes größer ist als die Menge von verfügbaren unterschiedlichen auswählbaren zugeordneten Fernsehsignalen, das Feld eine Fernsehprogrammierungssequenz mit einem interaktiv veränderlichem Programminformationsinhalt für ein gegebenes Fernsehprogramm enthält, die Schnittstelleneinrichtung eine Einrichtung aufweist zum interaktiven Auswählen eines Mehrkanal-Nachrichtenwegs durch das Feld, um den Fernsehprogrammierungssequenz-Programminformationsinhalt bereitzustellen, die interaktive Auswahl sowohl in zeitlicher als auch in Kanal-Auswahl innerhalb des Feldes im Multiplex-Betrieb verarbeitet wird, die Schnittstelleneinrichtung den Nachrichtenweg durch das Feld in Abhängigkeit einer einzelnen interaktiven Auswahl auswählt, wobei eine unterschiedliche interaktive Auswahl einen unterschiedlichen Nachrichtenweg durch das Feld und einen unterschiedlichen Programminformationsinhalt für die Fernsehprogrammierungssequenz liefert.
6. Interaktives Fernsehsystem nach Anspruch 5, bei dem der Programminhalt für das gegebene Fernsehprogramm außerdem eine gemeinsame vorab aufgezeichnete Fernsehnachricht enthält, die während des gegebenen Fernsehprogramms gemeinsam anzeigbar ist, unabhängig von jeglicher interaktiven Auswahl von interaktiv auswählbaren Fernsehnachrichten.
7. Interaktives Fernsehsystem nach Anspruch 6, bei dem jede der vollständigen Fernsehnachrichten innerhalb des Feldes, welche die Fernsehprogrammierungssequenz bilden, einen Trennwegabschnitt aufweisen, um einen Informationsübergang zwischen der gemeinsamen Fernsehnachricht und der Fernsehprogrammierungssequenz zu liefern, wobei die Fernsehprogrammierungssequenz und die gemeinsame Fernsehnachricht innerhalb eines gegebenen Fernsehprogramms echtzeitlich benachbart sind.

#### Revendications

1. Système de télévision interactive à plusieurs canaux (10) destiné à fournir une programmation de télévision interactive individualisée à une pluralité d'utilisateurs raccordés dans ledit système de télévision interactive, ledit système comprenant des moyens (12) d'émission de signal de télévision à plusieurs canaux servant à émettre un signal de télévision à plusieurs canaux qui comprend une pluralité de canaux pouvant être sélectionnés, une pluralité de moyens récepteurs de télévision classiques (32a, 32b, 32c) destinés à recevoir sélectivement une programmation de télévision individualisée sur un canal de visualisation de programme commun, et un moyen d'interface et de sélection (30a, 30b, 30c) disposé entre chacun desdits moyens récepteurs de télévision et lesdits moyens d'émission de signal de télévision à plusieurs canaux et destiné à recevoir ledit signal de télévision à plusieurs canaux émis qui comprend ladite pluralité de canaux pouvant être sélectionnés et à la convertir en un canal de télévision sélectionné individualisé en vue de la visualisation dudit canal sélectionné sur ledit canal de visualisation de programme commun sur le moyen récepteur de télévision qui est associé à un utilisateur donné en réponse à la sélection, par un utilisateur, indépendante d'une réponse interactive donnée à une pluralité de réponses interactives pouvant être sélectionnées dans l'émission dudit signal de télévision à plusieurs canaux, chacune desdites réponses interactives étant associée à un canal différent parmi ladite pluralité de canaux pouvant être sélectionnés, chacun desdits utilisateurs ayant un moyen récepteur de télévision associé et un moyen d'interface et de sélection associé afin d'effectuer ladite sélection d'utilisateur interactive indépendante pour produire ladite programmation de télévision individualisée sur ledit canal de visualisation de programme commun, l'émission dudit signal de télévision à plusieurs canaux comprenant une pluralité de signaux de télévision audio/vidéo différents pouvant être sélectionnés de façon interactive (14, 16, 18, 20) respectivement associés à chaque canal de ladite pluralité de canaux pouvant être sélectionnés qui constituent ledit signal de télévision à plusieurs canaux émis, lesdits signaux de télévision pouvant être sélectionnés de façon interactive étant au moins en synchronisation précise d'image complète les uns avec les autres, caractérisé en ce que lesdits signaux de télévision pouvant être sélectionnés de façon interactive comprennent en outre des signaux d'instruction qui leur sont incorporés afin de commander la production de ladite programmation de télévision individualisée sur ledit canal de visualisation de programme commun, ledit moyen d'interface et de sélection répondant auxdits signaux d'instruction incorporés en autorisant la commutation dudit canal de télévision individualisé entre ladite



pluralité de canaux de télévision pouvant être sélectionnés de façon interactive en vue de la visualisation dudit signal de télévision audio/vidéo associé qui correspond audit canal sélectionné parmi ladite pluralité de canaux pouvant être sélectionnés sur ledit canal de visualisation de programme commun suivant une présentation d'image visualisée de télévision interactive sensiblement instantanée et sans raccord visible sur ledit canal de visualisation de programme commun dudit moyen récepteur de télévision associé, différents moyens récepteur de télévision contenus dans ledit système étant en mesure de visualiser différents signaux de télévision audio/vidéo associés individualisés sur ledit canal de visualisation de programme commun sensiblement au même moment en fonction des diverses sélections d'utilisateur interactives indépendantes de canaux respectifs de ladite pluralité de canaux pouvant être sélectionnés par ladite pluralité d'utilisateurs à tout moment donné, ledit moyen d'interface et de sélection comprenant un moyen (40) formant un microprocesseur et un moyen (44, 46) de réglage d'accord de fréquence de signal de télévision, ledit moyen de réglage d'accord de fréquence de signal de télévision comprenant deux dispositifs de réglage d'accord de fréquence, dont l'un est accordé sur le canal en cours de sélection dudit signal de télévision à plusieurs canaux émis, et dont l'autre peut être accordé, préalablement à la réception d'une image complète successive suivante, sur le canal sélectionné suivant dudit signal de télévision à plusieurs canaux émis (14, 16, 18, 20) afin de produire un réglage d'accord de fréquence sélectif du canal suivant avant chaque commutation de canal entre ladite pluralité de canaux pouvant être sélectionnés, ledit moyen microprocesseur répondant à ladite sélection interactive d'utilisateur indépendante individualisée et auxdits signaux d'instruction incorporés en effectuant un préréglage d'accord de fréquence de l'autre dispositif de réglage d'accord de fréquence dudit moyen récepteur de télévision associé sur une fréquence de signal de télévision qui correspond audit canal sélectionné suivant de manière à produire une image visualisée sur ledit canal de visualisation de programme commun dudit moyen récepteur de télévision associé (32a, 32b, 32c) en fonction de ladite sélection d'utilisateur indépendante avant qu'un changement réel de ladite image visualisée de télévision sur ledit canal de visualisation de programme commun, à partir dudit canal en cours de sélection de ladite pluralité de canaux pouvant être sélectionnés, n'ait lieu en réponse à ladite sélection interactive d'utilisateur indépendante ; si bien que ledit caractère d'absence de raccord visible est maintenu pour ladite image visualisée de télévision sur ledit canal de visualisation de programme commun malgré les changements interactifs effectués sur ledit canal de télévision sélectionné pour la visualisation parmi ladite pluralité de canaux qui constituent ledit signal de télévision multicanaux.

2. Système de télévision interactive selon la revendication 1, où ladite pluralité de signaux de télévision pouvant être sélectionnés associés différents (14, 16, 18, 20) contenus dans ledit signal de télévision à plusieurs canaux comprend une pluralité de signaux de télévision individualisés qui sont en concordance de montage, si bien que la fréquence de télévision sur laquelle ledit premier dispositif de réglage d'accord de fréquence dudit moyen récepteur de télévision classique est accordé à n'importe quel moment donné sera en concordance de montage en passant dans toute autre fréquence de télévision sur laquelle ledit autre dispositif de réglage d'accord de fréquence dudit moyen récepteur de télévision (32a, 32b, 32c) s'accorde ensuite en réponse à un changement apporté à ladite sélection d'utilisateur.
3. Système de télévision interactive selon la revendication 2, où l'un desdits signaux de télévision individualisés en concordance de montage comprend une fréquence de télévision de canal source et lesdits autres signaux de télévision individualisés en concordance de montage (14, 16, 18, 20) comprennent des fréquences de télévision de canaux de branchement différents qui sont en synchronisation précise d'image complète avec ladite fréquence de télévision de canal source ; si bien qu'un branchement invisible instantané sur un intervalle vertical peut être réalisé en réponse aux différentes sélections d'utilisateur.
4. Système de télévision interactive selon l'une quelconque des revendications 1 et 2, où ledit signal de télévision à plusieurs canaux (14, 16, 18, 20) est émis de façon continue à destination de ladite pluralité de moyens récepteurs de télévision classiques (32a, 32b, 32c) pendant un intervalle de programme donné.
5. Système de télévision interactive selon la revendication 1, où ledit signal de télévision à plusieurs canaux émis (14, 16, 18, 20) comprend une séquence d'une pluralité de piles de messages de télévision à plusieurs canaux différentes, chaque pile comprenant une pluralité de messages de télévision à plusieurs canaux temporellement concordant, ladite pluralité de piles comprenant un

groupe ment d'empilage, ledit groupe ment d'empilage produisant une pluralité de messages de télévision préenregistrés complets multiplexés dans le temps et l'espace pouvant être sélectionnés qui viennent desdits moyens d'émission (12), ledit groupe ment étant émis dans ledit système à destination desdits moyens d'interface (30a, 30b, 30c), un unique message de télévision sensiblement complet  
5 pouvant être sélectionné de façon interactive dans ledit groupe ment en réponse à ladite sélection d'utilisateur de façon à produire un message de télévision interactive au titre dudit signal de télévision audio/vidéo associé individualisé à destination desdits moyens récepteurs de télévision classiques (32a, 32b, 32c) via lesdits moyens d'interface, la quantité de messages de télévision préenregistrés pouvant être sélectionnés de façon interactive qui sont disponibles dans ledit groupe ment étant plus grande que  
10 la quantité de signaux de télévision associés pouvant être sélectionnés différents disponibles, ledit groupe ment comprenant une séquence de programmation de télévision qui possède un contenu d'informations de programme variable de manière interactive pour un programme de télévision donné, ledit moyen d'interface comprenant un moyen qui sert à sélectionner de manière interactive un trajet de message à plusieurs canaux au travers dudit groupe ment afin de produire ledit contenu d'informations de programme de séquence de programmation de télévision, ladite sélection interactive étant  
15 multiplexée à la fois dans le temps et dans le choix des canaux pour ledit groupe ment, ledit moyen d'interface sélectionnant ledit trajet de message via ledit groupe ment en réponse à une unique sélection interactive, une sélection interactive différente produisant un trajet de message différent via ledit groupe ment et un contenu d'informations de programme différent pour ladite séquence de programmation de télévision.

6. Système de télévision interactive selon la revendication 5, où ledit contenu de programme se rapportant audit programme de télévision donné comprend en outre un message de télévision préenregistré commun pouvant être visualisé de façon commune pendant ledit programme de télévision indépendamment de toute sélection interactive desdits messages de télévision pouvant être  
25 sélectionnés de manière interactive.

7. Système de télévision interactive selon la revendication 6, où chacun desdits messages de télévision complets dudit groupe ment constituant ladite séquence de programmation de télévision comprend une partie "segway" servant à produire une transition d'information entre ledit message de télévision commun et ladite séquence programmation de télévision, ladite séquence de programmation de télévision et ledit message de télévision commun étant adjacents en temps réel dans un programme de télévision donné.

35

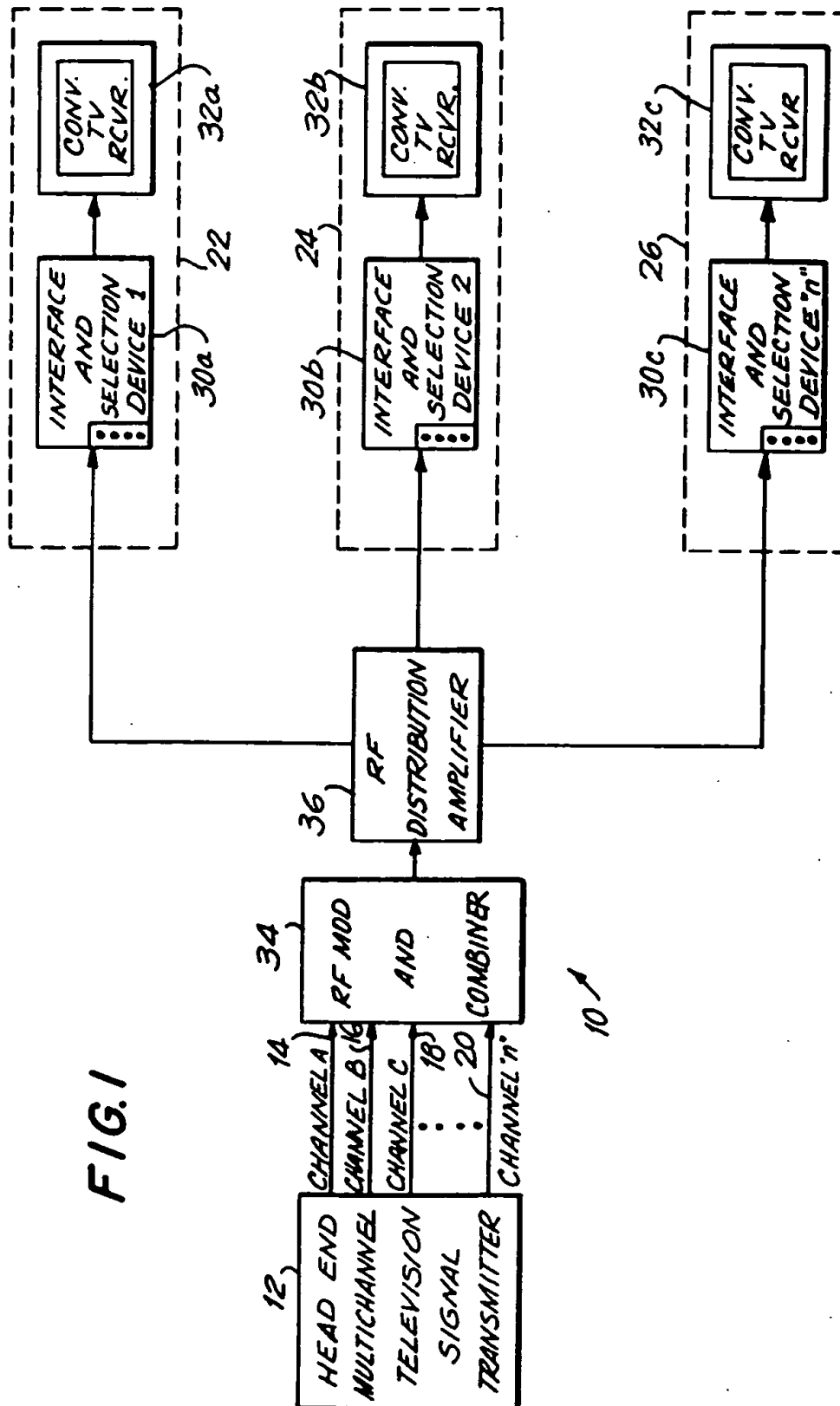
40

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50

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FIG. 1



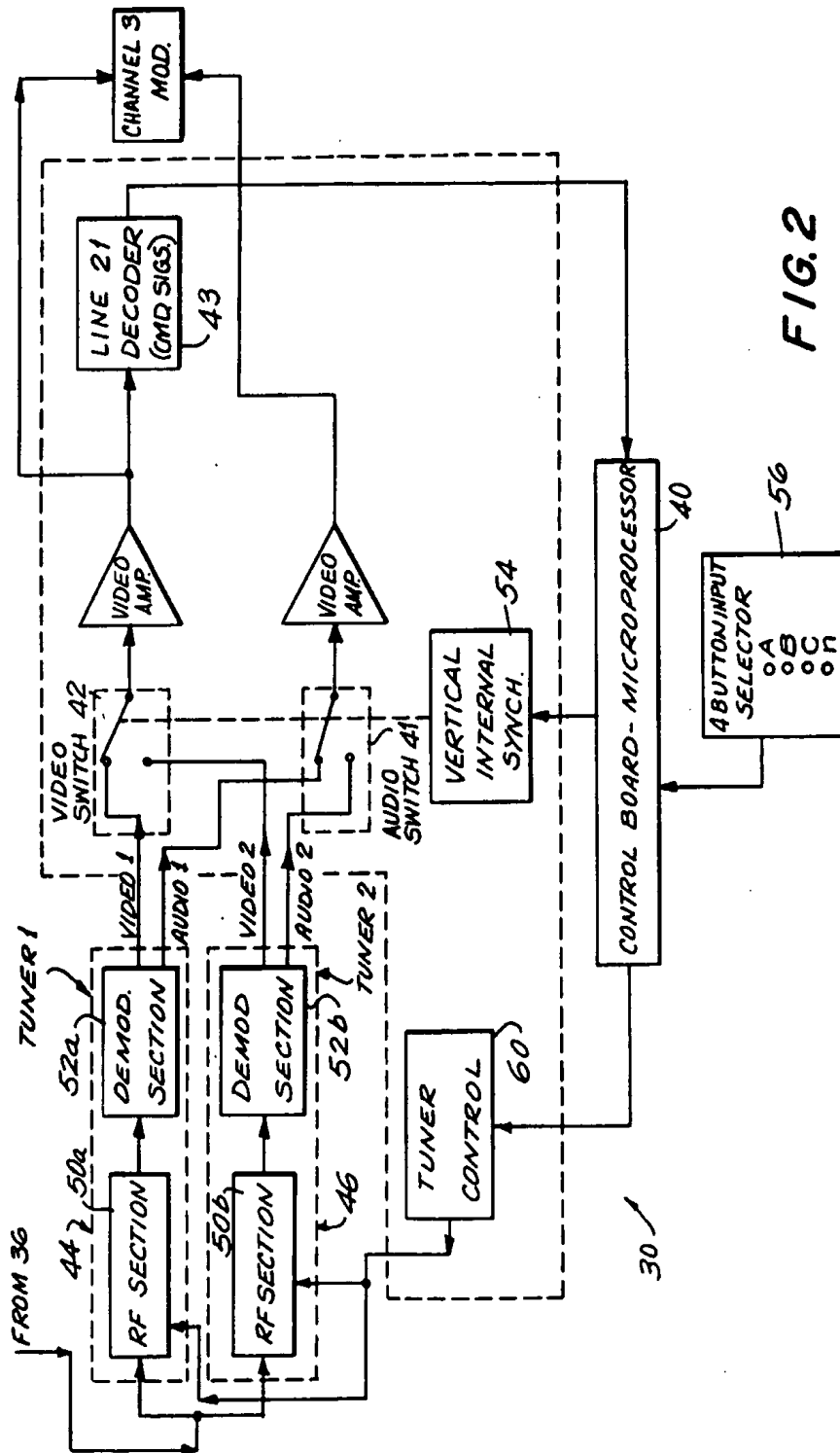


FIG. 3

| FIG. | FIG. | FIG. |
|------|------|------|
| 3A   | 3B   | 3C   |

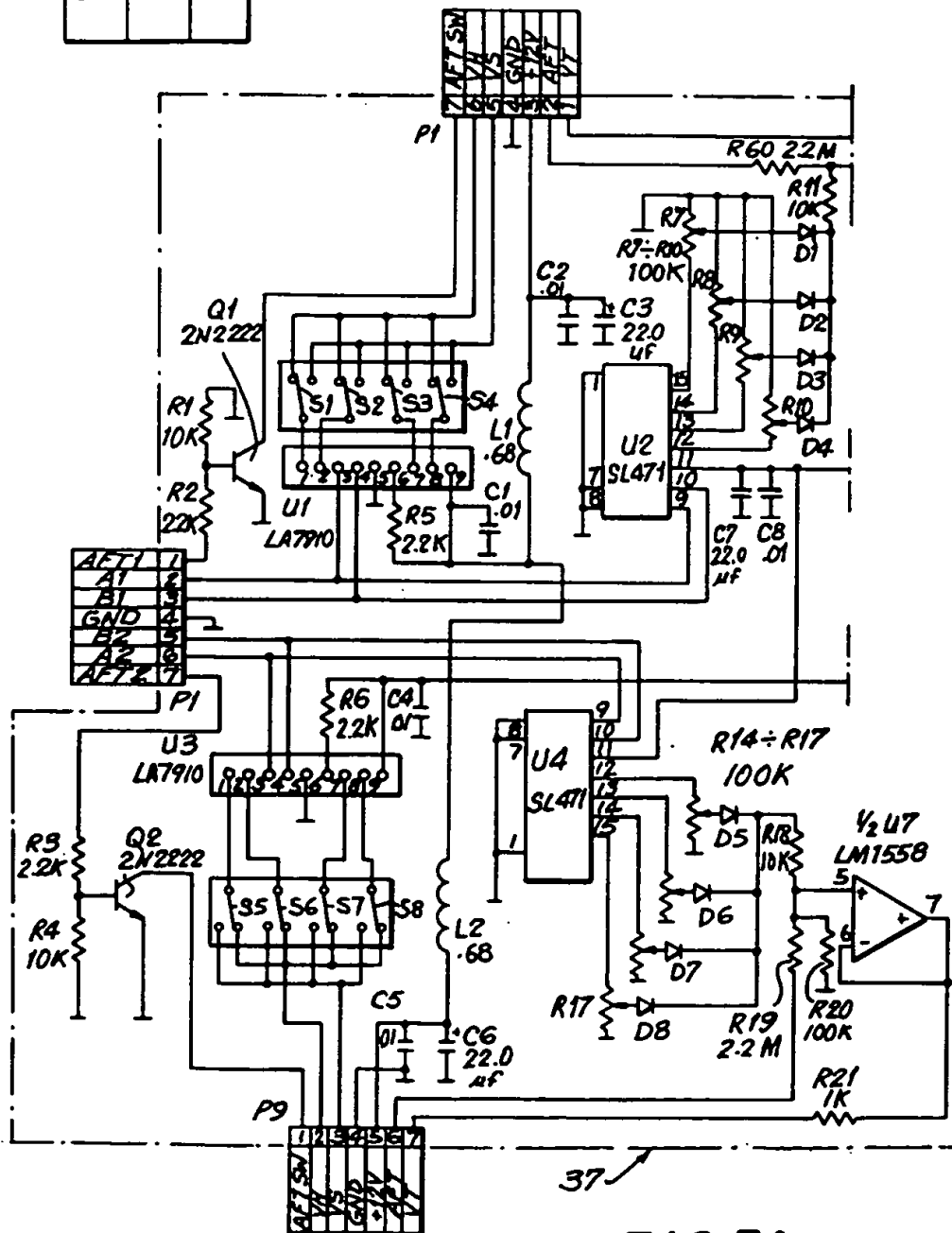


FIG. 3A



FIG. 3C

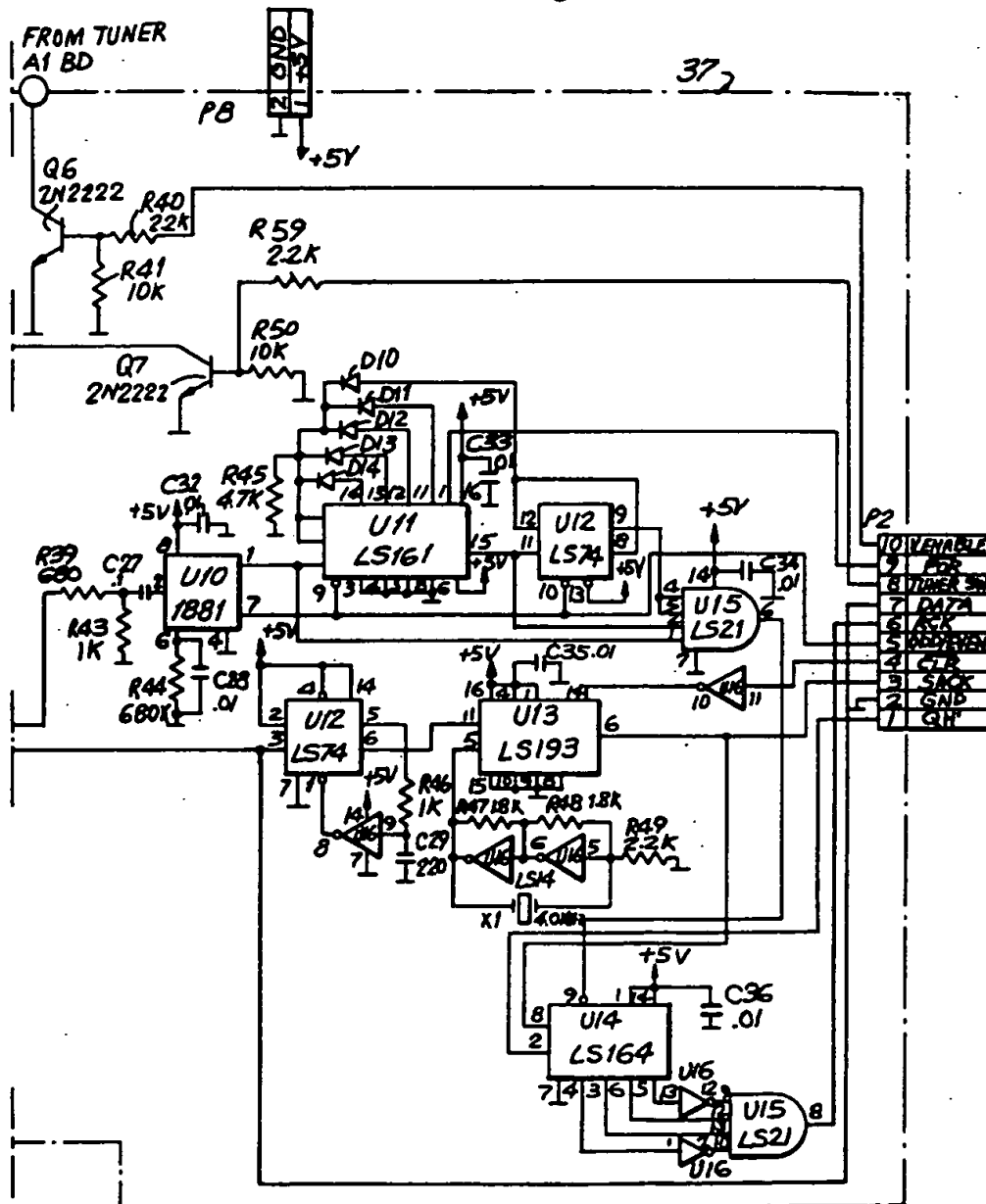
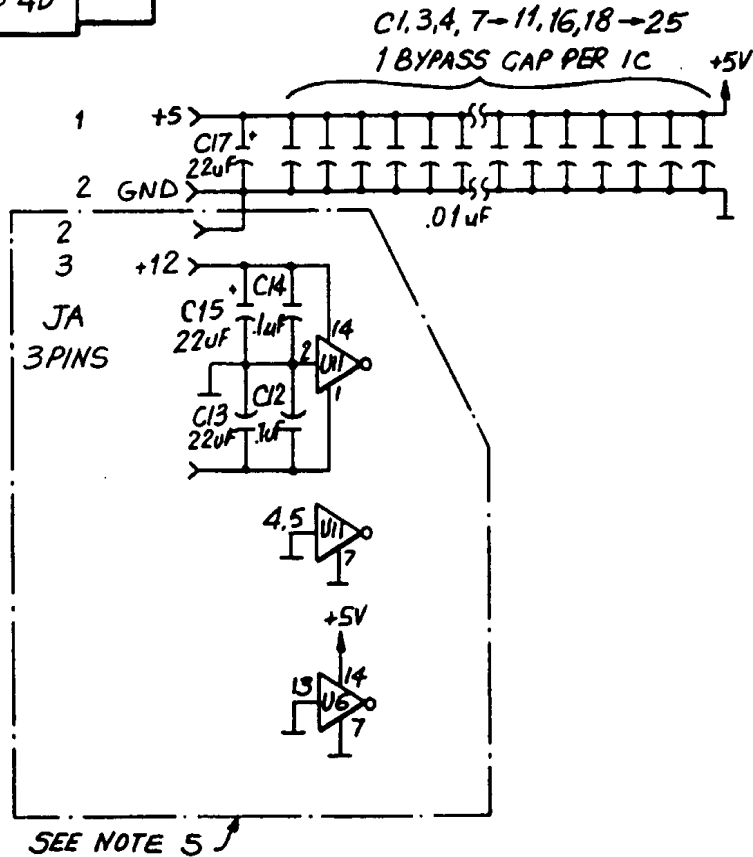


FIG. 4

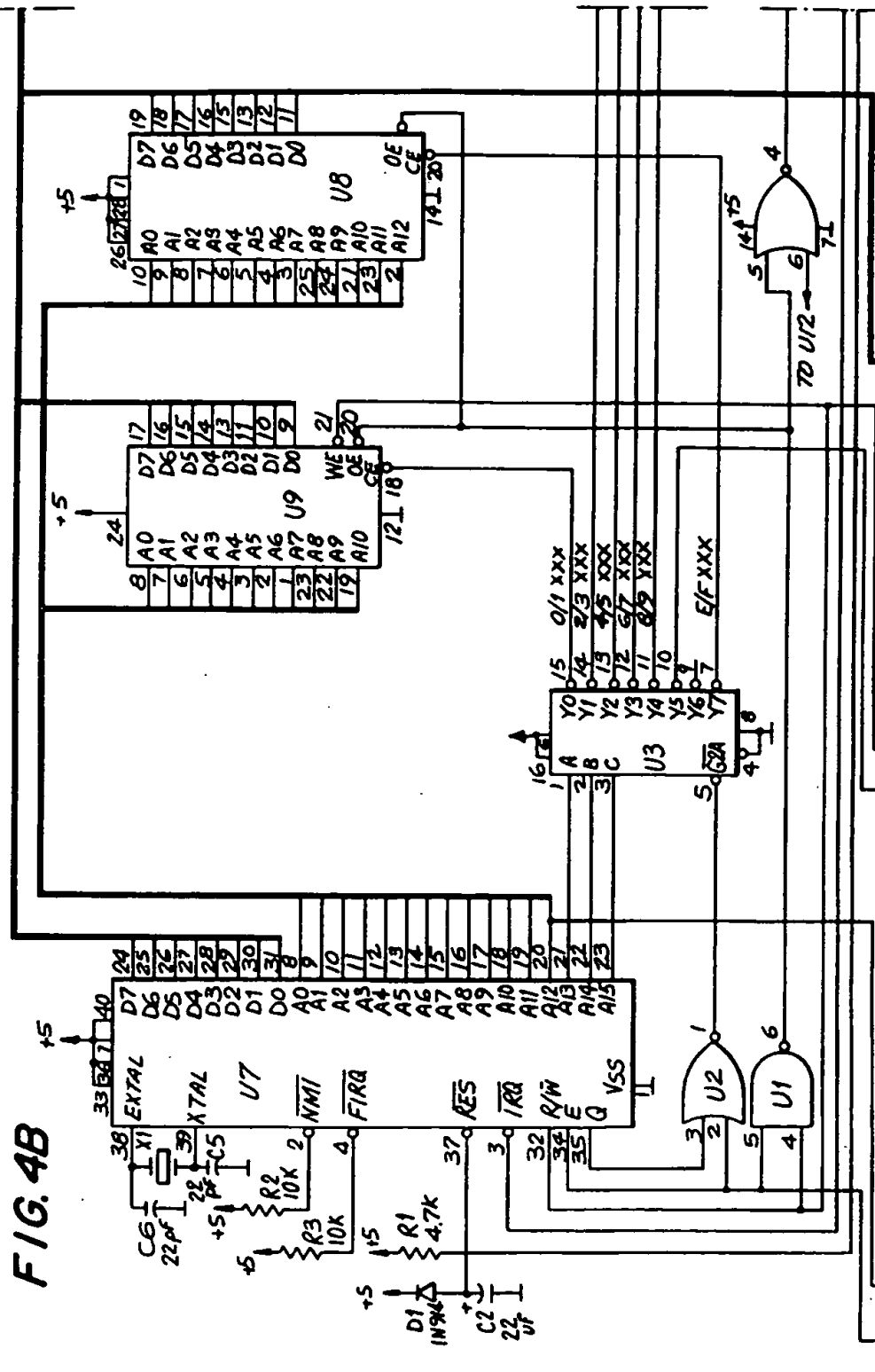
|            |         |            |
|------------|---------|------------|
| FIG.<br>4A | FIG. 4B | FIG.<br>4C |
|            | FIG 4D  |            |

FIG. 4A



|          |                    |                   |
|----------|--------------------|-------------------|
| U7       | 6809, MOTOROLA     | MPU               |
| U9       | AM1 S6516          | 16 STATIC RAM     |
| U8       | INTEL 2732 OR 2764 | 32K OR 64K E-PROM |
| U15      | 74LS 374           | OCTAL D-LATCH     |
| U16, U17 | 74LS 595           | 8BIT SHIFT REG.   |
| U14      | 74LS 244           | OCTAL BUFFER      |
| U3       | 74LS 137           | 3BIT DECODER      |
| U2       | 74LS 02            | QUAD 2IN NOR      |
| U1       | 74LS 00            | QUAD 2IN NAND     |
| U12, U13 | 74LS 74            | DUAL D FLIP-FLOP  |
| X1       | 4 MHZ              | CRYSTAL           |





**FIG. 4C**

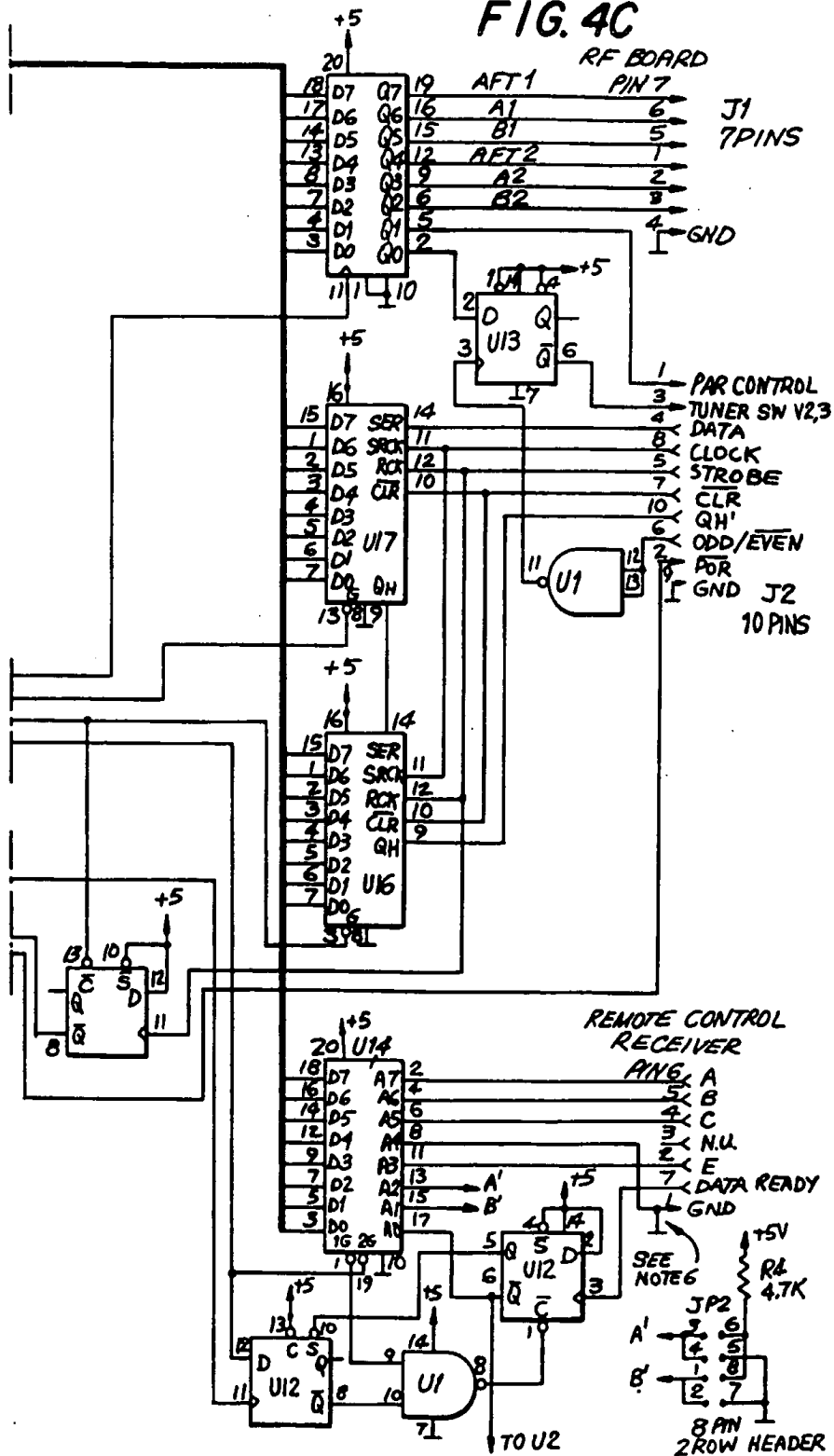
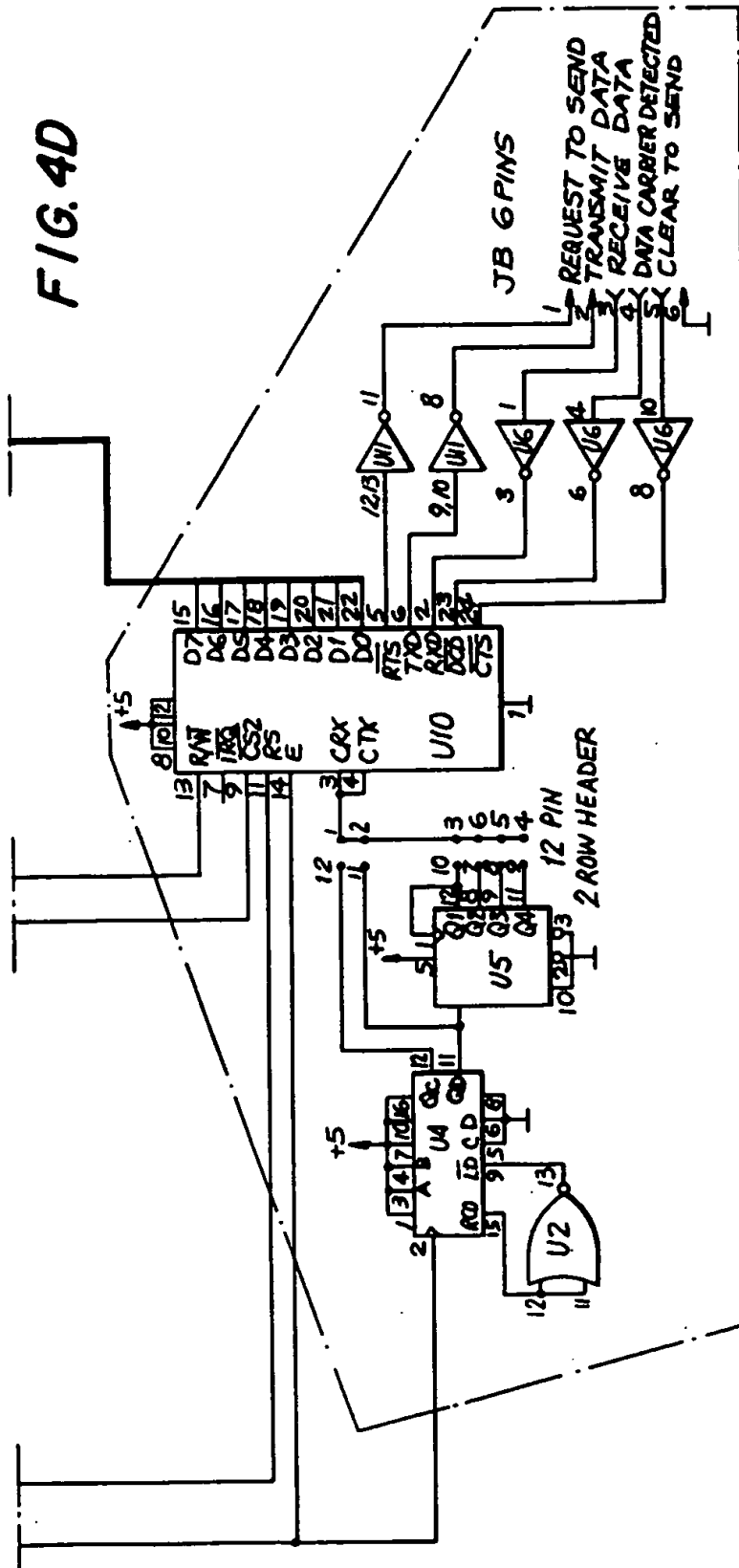


FIG. 4D



SEE NOTE 5

|     |         |                           |
|-----|---------|---------------------------|
| U4  | 74LS161 | SYNCHRONOUS 4-BIT COUNTER |
| U10 | 6850    | ACIA                      |
| U5  | 74LS93  | 4-BIT BINARY COUNTER      |
| U11 | 1488    | QUAD LINE DRIVER          |
| U6  | 1489    | QUAD LINE RECEIVER        |

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